Rural Workforce Development -
Involve, Innovate, Integrate and Implement

U.S. Department of Agriculture

"Can Rural America Meet The Demand For Skilled Workers?"

Crystal City, Virginia

February 17, 2006

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Can rural America meet the demand for skilled workers?

Rural areas face unique and difficult challenges today

- ***Geographic isolation,***
- ***Infrastructure deficiencies,***
- ***Poor links with metropolitan and global markets,***
- ***Weak community infrastructure for business growth,***
- ***The flight of skilled workers to metropolitan regions.***

States are focusing on new economic drivers for regions that do not have a diverse economic base

- ***Cluster-based strategies,***
- ***Entrepreneurship outside the agricultural sector, and***
- ***Diversification and value-added agriculture practices.***

The Texas Industry Cluster Initiative addresses both cluster-based strategies and opportunities presented by a strong entrepreneurship base

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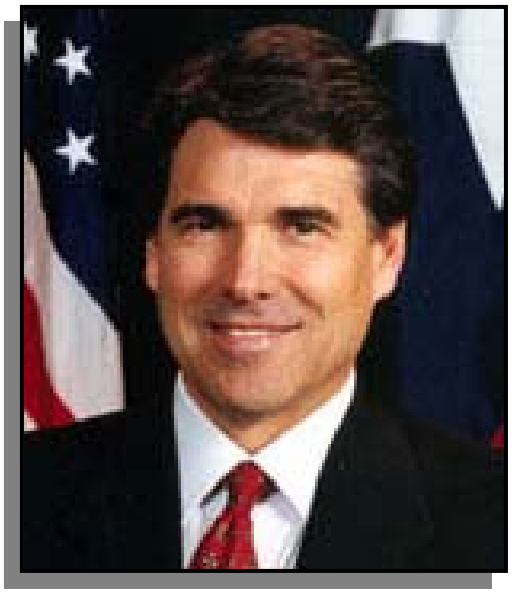
Engines of the Texas Economy



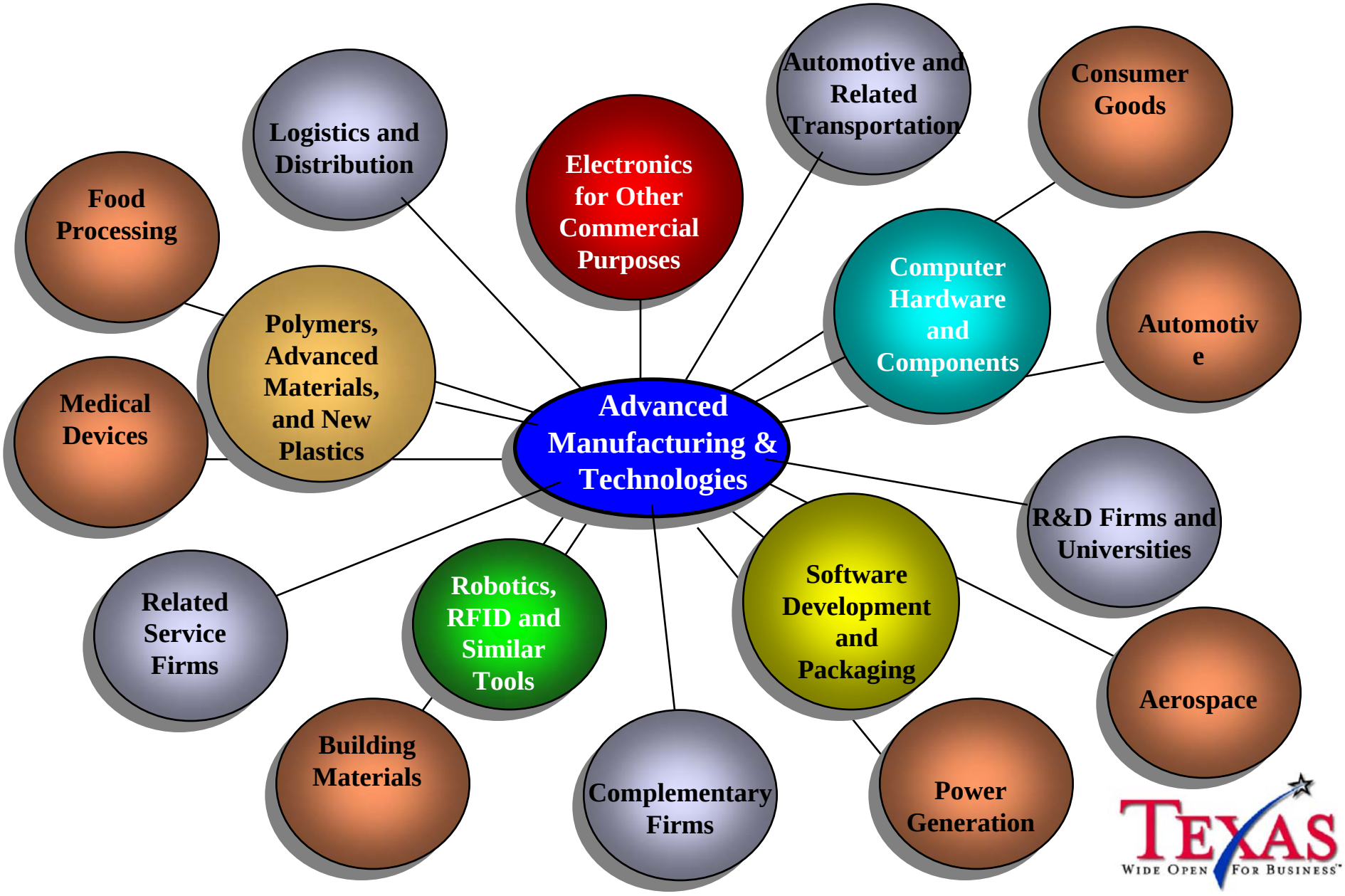
"This cluster initiative is important because for the first time in the history of this state, we will have a coordinated, market-driven economic development strategy that focuses on areas where we have the greatest growth potential and focuses on fostering that potential."

Rick Perry, Governor of Texas

Texas' Six Target Industry Clusters

- **Advanced Technologies and Manufacturing**
  - Nanotechnologies and materials
  - Micro-electro-mechanical systems
  - Semiconductor manufacturing
  - Automotive manufacturing
- **Aerospace and Defense**
- **Biotechnology and Life Sciences**
- **Information and Computer Technology**
  - Communications Equipment
  - Computing Equipment
  - Information Technology
- **Energy**
  - Oil and gas production
  - Power generation and transmission
  - Renewable / Sustainable energy sources
- **Petroleum Refining and Chemical Products**

What makes up a “cluster”?



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What gives a "cluster" a competitive advantage?

"Clusters" are broad networks of companies, suppliers, service firms, academic institutions, and organizations in related industries that bring new products or services to market. So why are certain companies based in certain regions capable of consistent innovation? The answer lies in four broad attributes:

1. **Factor conditions.** *The region's position in factors of production, such as skilled labor or infrastructure, necessary to compete in a given industry*
2. **Demand conditions**. *The nature of local market demand for the industry's product or service.*
3. **Related and supporting industries**. *The presence or absence in the region of supplier industries and other related industries that are internationally competitive*
4. **Firm strategy, structure, and rivalry.** *The conditions in the region governing how companies are created, organized, and managed, as well as the nature of domestic rivalry*

Competitors will eventually and inevitably overtake any company that stops improving and innovating. *Ultimately, the only way to sustain a competitive advantage is to upgrade it.*

From *"The Competitive Nature of Nations"*

Michael Porter

Harvard Business Review, 1990

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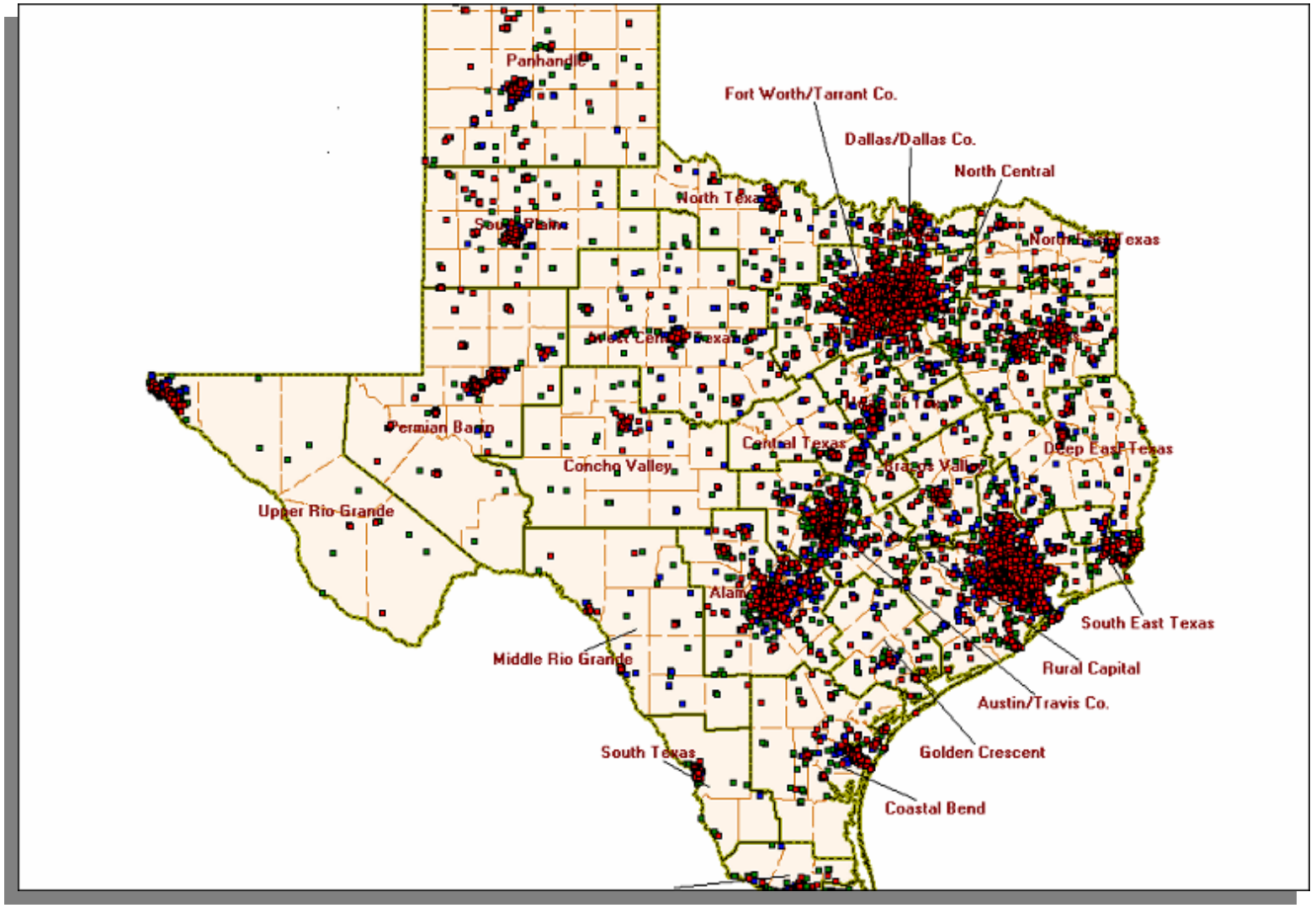
Industries and Stakeholders in Texas' Advanced Manufacturing and Technologies Cluster



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Strategies for Rural Workforce Development

- **Support the formation and operation of industry-driven networks.**
  - ***Networks bring businesses together to share ideas and innovations.***
  - ***Networks articulate workforce needs to colleges and universities***
  - ***Networks speak with one voice to government***

- **Ensure that remote clusters have access to critical resources.**
  - ***May include capital, advanced technologies, targeted workforce training, and business planning***
  - ***Must provide links to metropolitan and global markets***

- **Foster community colleges and universities**
  - ***May be the focal points for customized training, technology access, and research and development***

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Form Industry Driven Networks

- Networks should be collaborative, cooperative, and market-driven
- Networks may cross political boundaries to bring services to larger regions
- Networks bring together suppliers and consumers of goods and services for innovative partnerships
- Networks provide a forum for leveraging or transferring common technologies
- Networks convene suppliers and consumers of goods and services to form a critical mass as a competitive entity

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Form Industry Driven Networks - Temple College Bio-Science Project

The vision of the Temple College Bio-Science Project is to develop a seamless, comprehensive system for training Biotechnology Research Technician workers beginning in high school through University, culminating in employment

Partners include local workforce boards, hospitals, clinics,care systems, medical schools, ISD's, community colleges, and universities

Innovation: The goal of the project is to create "Nationally Recognized" model programs including:

- ***Rigorous high school courses leading to a College Degree in Biotechnology Research***
- ***An Associate of Applied Science in Biotechnology Research (AAS)***
- ***An Enhanced Skills Certificate in Genomics (ESC)***
- ***Internship opportunities of approximately 1000 hours***
- ***Apprenticeship opportunities of approximately 2000 hours***

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Form Industry Driven Networks - Temple College Bio-Science Project

Innovation: Targeted students include

- *High School Juniors and Seniors (Admitted in the Advanced Technology Center)*
- *Displaced Workers*
- *Limited English Proficiency Students*
- *Military Retirees, Spouses & Dependents*

Innovation: Graduate Competencies include:

- *Assist research scientists in the laboratory*
- *Perform technical procedures such cell counting, solution and media prep., electrophoresis, immunologic techniques, PCR*
- *Conduct experiments following standard operating and safety protocols*
- *Analyze and display data using computer technology*
- *Manage laboratory activities including record keeping, ordering, and preparation of reports*

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Form Industry Driven Networks - Temple College Bio-Science Project

Innovation: Apprenticeship program

- *Full-time, paid employee, with 144 to 359 hours of classroom instruction*
- *2000 hours of "on-the-job" learning*
- *Scott and White Apprenticeship Committee provides oversight, sets qualifications, determines competencies, and evaluates learning outcomes*

Program Advantages:

- *Research technicians that are trained in research specific curriculum*
- *Customized training through Internships and/or Apprenticeships*
- *A pool of potential workers that have hands-on experience in research labs*
- *Opportunity to screen workers through "on-the-job" learning*
- *Provides a Career Ladder for new and existing employees*

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Access to Critical Resources

Texas Enterprise Fund

- *Economic Development*
- *Infrastructure Development*
- *Community Development*
- *Job Training Programs*
- *Business Incentives*

Texas Emerging Technology Fund

- *Expediting innovation and commercialization,*
- *Attracting, creating or expanding private sector entities that will promote substantial increase in high quality jobs,*
- *Increasing higher education applied research capabilities.*

Build On Existing Businesses

- *Research has shown that between 40 and 80 % of new job creation comes from existing businesses*
- *Existing firms have already made a commitment to the community*
- *Firms being recruited will inevitably check with existing businesses to assess the local business climate*

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Access to Critical Resources

Texas Center for Rural Entrepreneurship provides

- *Asset mapping*
- *Entrepreneurial coaching*
- *Energizing entrepreneurs*
- *Entrepreneurial League System*
- *Hometown Competitiveness*
- *Business Incubation*
- *Youth Entrepreneurship Programs*
- *Sirolli Institute Enterprise Facilitation*

Customized Skills Training Funds provide

- *pre-hire screening and pre-employment training*
- *on-the-job and skilled trades training*
- *curriculum development, equipment, materials, manuals, etc.*
- *training costs of trainers*
- *link to local industry clusters*

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Foster Community Colleges and Universities - Texas State Technical College

The TSTC System colleges created a continuum of Advanced Manufacturing Technologies training that begins in secondary education programs, with a bridge to post-secondary education, including four-year institutions, and training for dislocated and incumbent workers.

- ***Each TSTC Workforce Development and Training divisions conducted a "Company Training Needs Survey"***
- ***Each met with workforce development boards to review the industry analysis***
- ***Common thread was "advanced manufacturing", including machining, tool and die, stamping, industrial maintenance, and plastic molding.***

Innovation: Create a K-12 awareness and a pilot high school training/youth apprenticeship program to train and certify high school students in Advanced Manufacturing Technologies.

Innovation: Establish a bridge between secondary education into community college Advanced Manufacturing programs which lead to certifications and an Associate of Applied Science Degree. TSTC Marshall will link training programs in two east Texas school districts.

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Foster Community Colleges and Universities - Texas State Technical College

Innovation: Connect university research in Advanced Manufacturing Technologies with two-year post secondary institutions of higher education and to industry.

- ***Baylor's Center for Astrophysics, Space Physics, and Engineering Research will create an internship program for TSTC students.***
- ***UT Brownsville will provide a seamless transfer for students with an Associates degree to either the Bachelor's of Applied Technology or Bachelor's of Applied Arts and Sciences.***

Innovation: Connect K-12 programs, community colleges, universities, industry, chambers of commerce, and other stakeholders to the program, and give them equity in the results.

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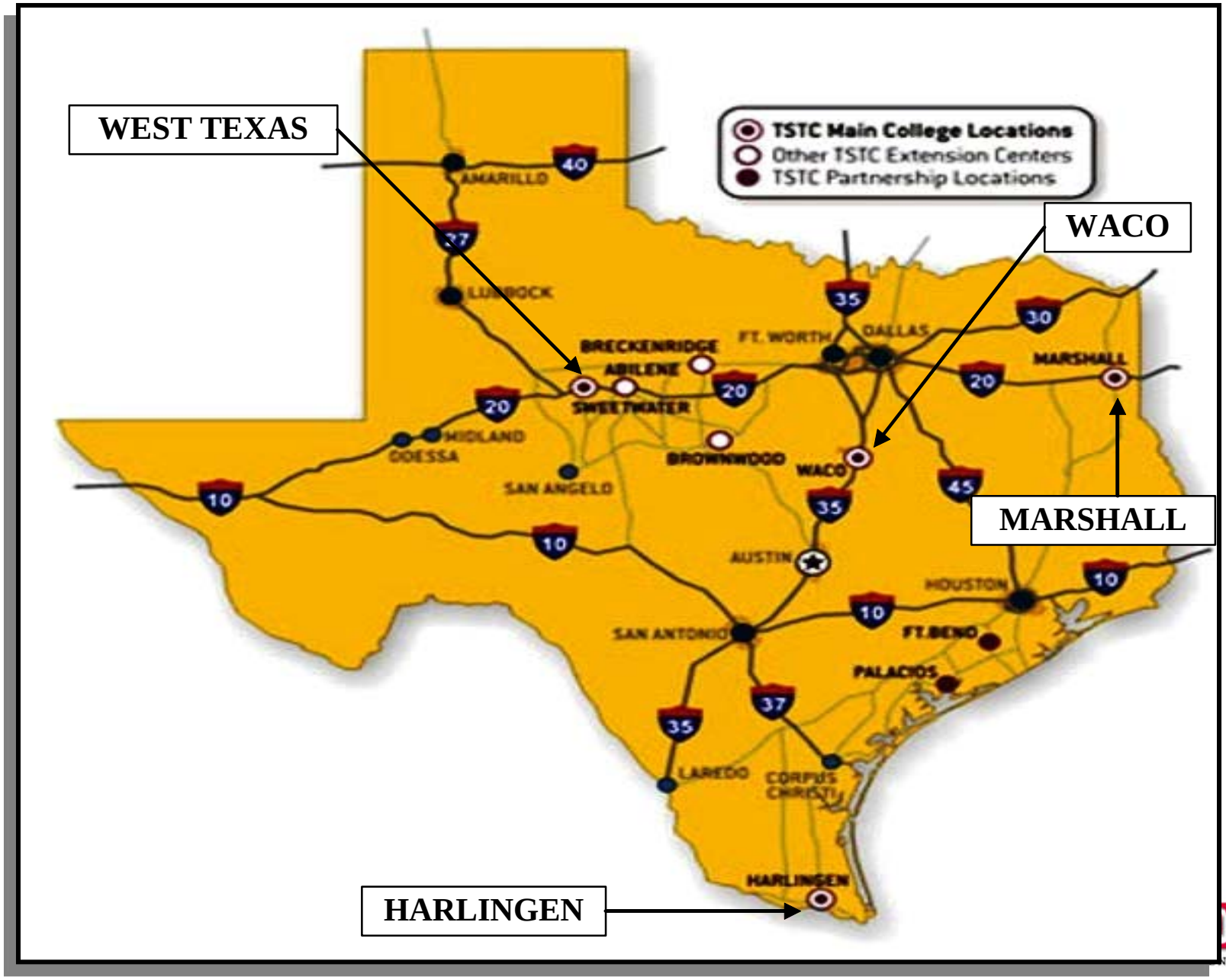
The Texas State Technical College Network



Next Steps

- **Texas' Industry Cluster Initiative I was completed in Spetember of 2005, and "Cluster II" is underway.**
- **Initiatives underway include:**
  - ***Business Climate:*** ***How to make it easier to do business in Texas. Includes projects on integrated permitting and reporting, for "shovel-ready" siting of projects.***
  - ***Critical Skill Requirements Inventory:*** ***What are the critical skills needed over the next five years in the key industries, and how do these needs match with current curricula?***
  - ***Broadband over Power Lines:*** ***The Internet provides even the smallest business with access to information and markets, at low costs of entry.***
  - ***Alternative Energy Innovations:*** ***Wind, biomass, methanol, and hydrogen are reaching maturity, and offer special opportunities for rural businesses to collaborate and utilize new technologies that provide them with a cost advantage.***
  - ***Education:*** ***How to work with educational agencies and institutions to align studies with those entry-level skills needed by industry.***

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